IN THE CLAIMS

1. (Currently Amended) A method of removing a photoresist layer comprising:

positioning a substrate comprising a photoresist layer into a processing chamber;

removing the photoresist layer using a plasma;

monitoring the plasma for both a ~~hydrogen~~ byproduct optical emission and ~~an oxygen~~ a reagent optical emission during the process; and

stopping the etching upon ~~either~~ the ~~hydrogen~~ byproduct optical emission obtaining a first level ~~or~~ and the ~~oxygen~~ reagent optical emission obtaining a second level~~, or both; and~~

~~determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both~~.

2. (Original) The method of claim 1 wherein the photoresist layer comprises a hardened crust layer.

3-5. (Cancelled)

6. (Currently Amended) The method of claim 2, wherein the monitoring step produces ~~a signal~~ signals having [[a]] first ~~level~~ levels while etching the crust and produces ~~a signal~~ signals having [[a]] second ~~level~~ levels after the crust has been removed.

7. (Currently Amended) The method of claim 1, wherein the byproduct is hydrogen and the hydrogen optical emission occurs at a wavelength of about 656 nm.

8. (Cancelled)

9. (Currently Amended) The method of claim 1, wherein the reagent is oxygen and the oxygen optical emission occurs at a wavelength of about 777 nm.

10-13. (Cancelled)

14. (Currently Amended) The method of claim [[13]] 6, wherein the monitoring step produces signals having ~~oxygen optical emission signal has~~ a third level after the photoresist is removed.

15. (Cancelled)

16. (Currently Amended) A method of etching a photoresist layer comprising:

providing a substrate comprising a photoresist layer to a process chamber;

etching the photoresist layer using a plasma; and

monitoring the plasma for both a byproduct ~~hydrogen~~ optical emission and a reagent ~~an oxygen~~ optical emission while etching~~; and~~

~~determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both~~.

17. (Original) The method of claim 16 wherein the photoresist layer comprises a crust.

18-20. (Cancelled)

21. (Currently Amended) The method of claim 16, wherein the byproduct is hydrogen and the hydrogen optical emission occurs at a wavelength of about 656 nm.

22. (Currently Amended) The method of claim 16, wherein the reagent is oxygen and the oxygen optical emission occurs at a wavelength of about 777 nm.

23-27. (Cancelled)

28. (Previously Presented) The method of claim 1, further comprising:
comparing the monitored optical emissions to a fingerprint of a clean chamber.

29. (Cancelled)

30. (Previously Presented) The method of claim 16, further comprising:
comparing the monitored optical emissions to a fingerprint of a clean chamber.

31. (Currently Amended) The method of claim 16, ~~wherein the determining step~~ further comprising ~~comprises~~:
determining the condition of a plasma source.

32. (Currently Amended) The method of claim 16 ~~wherein the determining step~~ further comprising ~~comprises~~:
determining the condition of an inner surface of the processing chamber.

33. (Currently Amended) The method of claim 1, ~~wherein the determining step~~ further comprising ~~comprises~~:
determining the condition of a plasma source.

34. (Currently Amended) The method of claim 1, ~~wherein the determining step~~ further comprising ~~comprises~~:
determining the condition of an inner surface of the processing chamber.

35. (Currently Amended) A method of etching a photoresist layer comprising:
providing a substrate comprising a photoresist layer to a process chamber;
etching the photoresist layer using a plasma;
determining an early endpoint indicator by monitoring the plasma for ~~at least one~~ a reagent optical emission while etching; and
determining ~~from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or~~

~~both~~ a final endpoint indicator by monitoring the plasma for a byproduct optical emission while etching.

36. (Currently Amended) The method of claim 35, wherein the ~~monitoring~~ determining a final endpoint indicator step further comprises:

monitoring the plasma for a hydrogen optical emission while etching.

37. (Currently Amended) The method of claim 36, wherein the ~~monitoring~~ determining an early endpoint indicator step further comprises:

monitoring the plasma for an oxygen optical emission while etching.

38. (Currently Amended) The method of claim 35, wherein the ~~monitoring~~ determining an early endpoint indicator step further comprises:

monitoring the plasma for an oxygen optical emission while etching.

39. (Currently Amended) The method of claim 35 ~~wherein the determining step~~ further comprising ~~comprises~~:

determining the condition of a plasma source.

40. (Currently Amended) The method of claim 35, ~~wherein the determining step~~ further comprising ~~comprises~~:

determining the condition of an inner surface of the processing chamber.

41. (New) The method of claim 1, further comprising:

determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both.

42. (New) The method of claim 1, wherein the monitoring step further comprises:

determining an early endpoint indicator from the reagent optical emission.

43. (New) The method of claim 1, wherein the monitoring step further comprises:

determining a final endpoint indicator from the byproduct optical emission.

44. (New) The method of claim 16, further comprising:

determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both.

45. (New) The method of claim 35, further comprising:

determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both.